


LLNL Environmental Restoration Division (ERD)
Standard Operating Procedure (SOP)

ERD SOP 5.6: Ground Water Elevation Reports—Revision: 0

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CONCURRENCE: <table><thead><tr><th></th><th>Date</th></tr></thead><tbody><tr><td><u>Valerie D. Hines</u> QA Implementation Coordinator</td><td><u>6/15/01</u></td></tr></tbody></table>		Date	<u>Valerie D. Hines</u> QA Implementation Coordinator	<u>6/15/01</u>			
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1.0 PURPOSE

The purpose of this SOP procedure is to establish the means for receiving, entering, and distributing ground water elevation measurements received each month for Livermore Site and Site 300. This procedure is to ensure complete and consistent handling of all ground water elevation measurements for both Livermore Site and Site 300, within the Environmental Restoration Division (ERD) Data Management Team (DMT).

2.0 APPLICABILITY

This SOP procedure applies to personnel performing quality affecting activities in the receipt, entering, and distribution of monthly Livermore Site and Site 300 ground water elevation measurements.

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3.0 REFERENCES

Not applicable.

4.0 DEFINITIONS

Not applicable.

5.0 RESPONSIBILITIES

5.1 Division Leader (DL)

The DL's responsibility is to ensure that all activities performed by ERD at the Livermore Site and Site 300 are performed safely and comply with all pertinent regulations and procedures, and provide the necessary equipment and resources to accomplish the tasks described in this procedure.

5.2 ERD Data Management Team (DMT)

The DMT's responsibilities are to receive and process ground water measurements as outlined in this procedure.

5.3 Samplers

Samplers are responsible for taking ground water elevation measurements by following appropriate procedures, including logging measurements on the current month's ground water elevation fieldsheet. The ground water elevation fieldsheet is to be delivered to the DMT as soon as possible.

6.0 PROCEDURES

6.1 Ground Water Elevation Fieldsheets

Ground water elevation fieldsheets are received directly from samplers or retrieved from DMT mailbox.

6.2 Entering Measurements to Spreadsheet

Open the previous month's or quarter's file and save it as the current month's entry. Hand enter the new depth to water measurements and dates into a spreadsheet. Enter note codes into the note field (i.e., 'pump off' is in the report_note field as 'PF'). If POMs (point of measurements) are noted on the fieldsheet, enter these changes in the Tcasing_Ht field of the well table before moving them into the database. Save the file as an Excel file and save again as a CSV format file. The CSV file will have an extension, 'xxxxxx.csv'. Transfer that file to your UNIX subdirectory.

6.3 Upload Data

Open an isql session. Check that the gweltemp table and wgwelevation are empty by using the sql below. If not, delete all previously entered information.

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```
select * from gweltemp
select * from wgwelevation
```

Open file called gweltemp.cpin to copy in 'csv' files. Make sure asterisks '*' are on column six of the spreadsheet. This file contains the six individual queries shown below.

In isql individually run the 6 queries in the order shown. Separate the queries using the commenting out characters: /*, */. The example below shows queries 2 through 6 being commented out:

- copy gweltemp (loc_id='c0comma',dtw='c0comma',day='c0comma',
report_note='c0comma',note='c0comma',misc='c0nl')
from '(enter file name)'
/*
- update gweltemp set sampled=
c(day)+'(enter current sample date)'
- insert into wgwelevation
(loc_id,sampled,depth_water,report_note,note)
select loc_id,sampled,dtw,report_note,note from gweltemp
- select * from gweltemp
- delete from gweltemp
- select * from wgwelevation
*/

6.4 Calculation and Update

Run gwelevcheck.upd. This retrieves well_msrg_pt from the well table and subtracts the depth_water measurement to calculate the elevation. Location identifier (loc_id), sampled date (sampled), depth-to-water (depth_water), calculated ground water elevation (elevation), sampling organization (sampling_org), note, retrieved well measuring point (well_msrg_pt), entered date (entered), and project name (project) are stored in the wgwelevation table fields. Set project to either 3GIV or LGIV.

Note: Any change to depth-to-water or POM fields will require a manual recalculation of the ground water elevation in the global table.

6.5 Verifications

Run gwelevcheck.sql. Print hard copies.

6.6 Site 300 Artesian Wells

Artesian wells are noted with either 'PSI' or 'FA' in the report_note field. The depth to water value is multiplied by 2.3087 to give the correct elevation value. In

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wgwelevation change depth and elevation to the calculated value on the Artesian wells spreadsheet when updated.

6.7 Generate Ground Water Report: Appendix C

At the UNIX prompt, type `report epddata gwreport`.

Enter `'areal_LorS'` (LLNL or S300)

Enter `'proj'` (LGIV or 3GIV)

Enter `'rptName'` (include-site and month in report name)

Print report using font size 8, portrait orientation. Distribute report as appropriate.

6.8 Append to Global Ground Water Elevation Table

Append ground water data using the file `gwelappend.upd`.

6.9 Generate Ground Water Difference Report

Run the `gwelevdif` report to calculate the relative difference between the present month and previous month's depths. At the UNIX prompt type `report epddata gwelevdif` and answer questions.

Enter `'gw1StartDate'` (mm-dd-yy, previous month's beginning date)

Enter `'gw1EndDate'` (mm-dd-yy, previous month's ending date)

Enter `'gw2StartDate'` (mm-dd-yy, current month's beginning date)

Enter `'gw2EndDate'` (mm-dd-yy, current month's ending date)

Enter `'proj'` (LGIV or 3GIV)

Enter `'mo1'` (current month's number, 1 = January)

Enter `'yr1'` (yyyy, current year)

Enter `'mo2'` (previous month's number, 12 = December)

Enter `'yr2'` (yyyy, previous month's year)

Enter `'rptName'` (include- site and month of report)

Print report using font size 8, portrait orientation. Check any measurements with a difference of 1 foot or more. Make corrections and re-run as necessary. Distribute final report as appropriate.

6.10 Generate Fieldsheets

6.10.1 Livermore Site

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At the UNIX prompt, type `report epddata llnlfieldsheet.rw`. At the prompt, enter the appropriate dates.

Enter number of new month (mm, current month's number, 1 = January)

Enter number of previous month (mm, previous month's number, 12 = December)

Enter beginning date of previous month (mm-dd-yy, 12-01-00)

Enter ending date of previous month (mm-dd-yy, 12-31-00)

6.10.2 Site 300

New locations at Site 300 that are monitored monthly should be appended to the "ablist" (short for abbreviated list) table. At the UNIX prompt type, `qbf epddata ablist`.

Note: The ablist table is used for gathering Site 300 wells to be sampled monthly rather than just quarterly. The first month of each quarter [1 (Jan.), 4 (Apr.), 7 (July), and 10 (Oct.)] are full reports. The second and third months of each quarter are the ablist (abbreviated).

There are four major files:

`s300southern.rw` (first month of quarter – 1 [Jan.], 4 [Apr.], 7 [July], and 10 [Oct.] – full reports)

`s300ewfa.rw` (first month of quarter – 1 [Jan.], 4 [Apr.], 7 [July], and 10 [Oct.] – full reports)

`s300abbsouth.rw` (second and third months of quarter – 2 [Feb.], 3 [Mar.], 5 [May], 6 [June], 8 [Aug.], 9 [Sept.], 11 [Nov.], and 12 [Dec.] – abbreviated reports)

`s300abbewfa.rw` (second and third months of quarter – 2 [Feb.], 3 [Mar.], 5 [May], 6 [June], 8 [Aug.], 9 [Sept.], 11 [Nov.], and 12 [Dec.] – abbreviated reports)

At the UNIX prompt type `report epddata xxxxxxxx.rw` for the specific fieldsheet.

Print fieldsheets using font size 8, portrait orientation. Distribute fieldsheets to the appropriate Sampling Technician before the end of the current month.

7.0 QUALITY ASSURANCE RECORDS

7.1 Fieldsheets

8.0 ATTACHMENTS

Not applicable.